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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/025,447 | 12/19/2001 | James G. Fleming | SD6942/S97581 | 6659 |

7590 08/01/2003

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EXAMINER

PAK, SUNG H

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 08/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicant(s)

10/025,447

Applicant(s)

FLEMING ET AL

Examiner

Sung H. Pak

Art Unit

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-- The MAILING DATE of this communication appears on the reverse with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) 24-43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-23, drawn to a microfabricated Bragg waveguide, classified in class 385, subclass 132.
- II. Claims 24-43, drawn to a method of fabricating a microfabricated Bragg waveguide, classified in class 385, subclass 132.

Inventions group II and group I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product claimed can be made by another materially different process, such as mechanical machining followed by chemical coating; laser ablation followed by sputtering deposition, etc.

Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group I, restriction for examination purposes as indicated is proper.

During a telephone conversation with Kevin Bieg on 7/21/2003 a provisional election was made without traverse to prosecute the invention of group I, claims 1-23. Affirmation of this election must be made by applicant in replying to this Office action.

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Claims 24-43 are withdrawn from further consideration by the examiner, 37

CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Information Disclosure Statement

All references submitted in the information disclosure statement have been considered by the examiner. Please refer to PTO-1449 enclosed herewith.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-10, 12-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Huber et al (US 2003/0035613 A1).

Huber et al reference discloses an optical device with all the limitations set forth in the claims, including: a trench having a hollow core (filled with air or gas having a refractive index lower than the cladding) embedded in a silicon substrate (paragraph 0029, 0030); a multi-layer dielectric cladding disposed on the inner wall of the trench, such that the light wave is being guided via internal reflection in the core region with a minimal loss (paragraph 0029); the hollow core having a cross-section of dimension as low as 4 microns (paragraph 0036). Although Huber et al reference does not explicitly state that the multi-layer dielectric cladding comprises alternating layer of high and low refractive index dielectric material, such multi-layer dielectric reflecting surfaces are typically alternating high and low refractive index materials. Therefore, Huber et al inherently discloses a dielectric cladding with alternating high and low refractive index materials.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-10, 12-22 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Huber et al (US 2003/0035613 A1) in view of Laakmann (US 4,688,893).

Laakmann reference was cited in the information disclosure statement.

As discussed above, Huber et al reference discloses an optical device with all the limitations set forth in the claims. However, if the applicants believe that alternating high and low dielectric materials are not inherently disclosed by the reference, the claims are alternatively rejected under 35 USC 103(a).

Huber et al reference discloses an optical device with all the limitations set forth in the claims as discussed above, except it does not explicitly mention the use of dielectric multi-layer with alternating high and low refractive index materials. However the use of alternating high and low refractive index materials for waveguide cladding is known in the art as taught by Laakmann (US 4,688,893) (column 3 lines 25-31).

Laakmann teaches that such a dielectric cladding is advantageous because it allows for a cladding with high reflectivity. Therefore, it would have been obvious to a person of ordinary skill in the art to modify Huber et al device to have a multi-layer dielectric cladding with alternating high and low refractive index materials.

Claims 11, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huber et al (US 2003/0035613 A1).

Huber et al reference discloses an optical device with all the limitations set forth in the claims as discussed above, except it does not teach filling the core area with material having a refractive index higher than the dielectric cladding. However, filling the core area of a waveguide with material having a refractive index greater than the cladding is well known and commonly taught in the waveguide art. Such a core material allows light (especially light with shorter wavelengths) to be efficiently confined in the core area. Therefore, it would have been obvious to a person of ordinary skill in the art to modify Huber et al device to have a core material having a refractive index greater than the dielectric cladding.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sung H. Pak whose telephone number is (703) 308-4880. The examiner can normally be reached on Monday - Thursday : 6:30am-5:00pm.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Sung H. Pak
Examiner
Art Unit 2874

sp
July 23, 2003



HEMANG SANGHAVI
PRIMARY EXAMINER